Sustainable Architecture and Food Production: Impact of Modernity on the Traditional Urban Form

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Abstract

Architecture in any period has often been a reflection of the sociological, cultural, economic and technological aspects of its development. Though it has been argued that Africa has no recorded history in the written form, but evidences persist of the rich culture of the different tribes that makes up the constituent of its inhabitants. This paper examines some of these socio-cultural factors that impinge on the historical traditional forms and architectural system in sub-Saharan Africa, by considering the pattern of food production and consumption. It also examines in particular existing relationship between architecture and food consumption that affect the sustainable built form found in south west Nigeria. The paper is thus an endeavor to discuss the connections, interrelationships and benefits of these concepts in the evolving modern socio-cultural views on Africa. The paper report a recent field survey carried out in the study area, based on quantitative and qualitative methodology. Sizeable numbers of questionnaire are administered to the target population, using stratified random sampling method in order to elicit primary data; with 76 percent response rate from the respondent. The survey and interview conducted highlights a number of observations and conclusion of the relationship between food production activities and its role in city development or formation.

Keywords: cultural sensitivity, development, sustainable food-production, social institutions, Nigeria, urbanization

1 Introduction

The key to address the current debate on the sustainable future for the earth especially the urban centres may be found in the activities surrounding the production of food and the built environment. There is a lack of understanding of how food in the historical past has contributed to the formation of the present urban landscape and how it may well shape its future. This lack of understanding is clearly evident in our manner of urban lifestyle and the present unsustainable ways in which food activities were carried out, which has contributed to the deteriorating nature of our towns and cities (Steel, 2008; Alexander, 2009).

Recent researches have shown that there is a lack of information on the growths of cities especially in developing countries, considering aspects of food and agriculture (Steel, 2008; Allen, 1993). The developing countries are especially affected, in their bid to follow global trends has embraced many policies and socio-cultural lifestyles that are unsustainable (Olayiwola, 2000; Olanrewaju, 1996). The developing countries such as Nigeria, accounted for the most number of rapidly urbanized centres in sub Sahara Africa (Mabogunje, 1980; Onibokun, 1985), with its attendant overpopulation, poverty, lack of employment, dependency on fossil based economy and stack abandonment of its agricultural base. Without addressing this problem from the viewpoint of earth scarce resources such as in food production, we may be unable to sustain life in a city. Hence, there is a need for a rethink in order to make adequate provision for the present and future generations. This paper is an attempt to open the discourse on the connection and relationship between sustainable food production and city growth especially in the developing countries.

2 Food and the Concept of Sustainable Development

Sustainable development could be regarded as a process of change in which the exploitation of resources; the direction of investments, the orientation of technological development, and institutional change are in harmony and enhance both current and future potential to meet human needs and aspirations (Egan, 2004; Hewitt and Hagan, 2001). Sustainable development can be viewed as that development that cultivates the environmental and social conditions that will support human well being indefinitely. Discussion on sustainable development received significant exposition through the influential Brundtland report of 1987 (Pearce et al, 1990). Notable organizations such as the International Union for the Conservation of the Nature, World Wildlife Fund and the United Nations Environmental programme, all contributed to the enshrinement of the tenets of sustainable development in the environmental circles. Sustainable development embraces all activities that meet the needs of the present without compromising the ability of the future generations to meet their own needs. Pearce et al, (1990: 10) also defines it as a development strategy that manages all assets, natural resources and human resources, as well as financial and physical assets for

increasing long term wealth and well being. According to Repetto, (1986) the doctrine of sustainable development reject all policies and practices that support current living standards by depleting the productive base, including natural resources and leaves future generations with poorer prospects and greater risks than our own. The United Nations conference on Environment and Development (UNCED) held in Rio in1992 and the second Habitat Conference held in Istanbul in 1992 further brought the idea of sustainable development into limelight.

2.1 Sustainability and the sustainable food question

Hence, the tenets of sustainability involve the possible ways of carrying out present activities without endangering the future for generations. For any development to be sustainable, there are elaborate sets of minimum conditions to be present. These minimum conditions are based on "natural capital stock" that should not decrease over time. The natural capital stock consists of all environmental and natural resource assets. Development can be viewed as a desirable change, it consist of list attributes which society seeks to achieve or maximize. Development in this paper, is closely tied to changes in the culture of the people, improvement in the social amenities (involving provision of good infrastructure such as roads, water and energy system to support food production), increase access to basic education and better living condition, the cumulative effect which resulted in a sustainable built environment. This approach places emphasis on sound environmental management for meeting the objectives of sustainable development.

However, the rate at which people are consuming natural resources and polluting the environment (ecological footprint), is rising exponentially. The available resources and capacity of the earth can not sustain humanity's activities endlessly (Humphrey et al, 2008). Humanity's activities (such as transportation, agriculture, housing, waste and infrastructure) have generated large ecological or carbon footprint which has increased by around 150% in the last 40 years. If left unchecked will result in a permanent loss of biodiversity, this will affect access to water, food production, health and shelter for hundreds of millions of people around the world (Francis & Gill, 2009).

It is important to point out that there exist strong connections between food production and architecture/ urban planning (Gordon, 1990; Chimbowu and Gumbo, 1993; Greenhow, 1994,). It has been documented that food production and consumption is one of the main contributor to earth's ecological footprint (Sodagar, et al 2008). The three planet model, estimates that an average European consumes three times the amount of food compare to those in the developing countries, . Human population has increased rapidly over the past 50 years and it is estimated to be over 7.5 and 8.3 billon people before 2025; compare to less than 2.5 billion in 1961 and presently 6.5 billion (United Nations Population division, 2009; PAI, 2006). This huge increase in population will require food that must be sourced or produced in a sustainable way. The world can not afford to continue to go about food production and consumption in the usual way.

According to Steel (2008) and Zetter, et al, (2006) food must be sourced locally or produced in the city in order to reduce burden on the rural or hinterland. According to Patrick Geddes the evolution of the city are complex and complicated in nature that encompasses the physical attributes of sustainability; but involves the social, cultural, political, economic and historical issues (Welter, 2002). This must be fully addressed through social justice and encouraging a lifestyle that live within the fair-share of the earth limited resources. Food should not be allowed to become a political weapon in the hand of the rich corporations, nor another means to squander earth resources and increase social inequality among developed and developing countries. It must become a useful tool in building social cohesion and interactions between society's different components leading to a sustainable communities and cities.

Sustainability can also be discussed at different levels these are; the project, building sector, and global levels. The highest level deals with environmental quality such as the global warming, ozone depletion and pollution, which are arguably tied to the issue of food activities. However, there is no single strategy for sustainability. The strategy to be used depends on the objectives and levels of sustainability being envisaged. Hence the paper addresses the necessary socio-cultural issues and principles that can contribute to the creation, maintenance and sustainability of the qualitative urban environment. This in effect is to promote the conservation, rehabilitation and maintenance of the city.

2.2 Social networks and the sustainable question

To attain the noble ideals of sustainability, a holistic view of the existing social context must be taken into consideration. Law (1991: 9-10) argued that 'in practice nothing is purely technical and neither is anything purely social… what appears to be social is partly technical and what is technical is partly social'. Therefore, social issues played significant roles in the development of the society. Need to say that much research attention has been focused on the technical aspects, with little or no concern for the non-technical or social aspect of the built environment (Saunders, 1987). Law & Callon (1992) asserts that these non-technical issues as soft issues are critical to the achievement of a holistic sustainable development.

This paper, however, emphasizes the importance of these socio- issues. In order to capture the essence of the social world, the natural, corporeal, technological and sociological must be understood. However, to entirely describe social changes, a range of issues must be given consideration; economic, political, technological and applied scientific research (Latour, 1987; Law, 1986; 1987; 1991). To achieve the above, Bijker (1997:47) draws up four distinct but related steps of identification, drawing up, delineation and description of "relevant social group"; (a) identifying relevant social groups that played vital roles in shaping societal interactions (b) drawing up of detail description of the identified "relevant social group"; (c) making a clear distinction between various social

group, by charting new social boundaries, based on their impact and level of influences and (d) making sense of interrelated and interdependent actors, based on their impact and relevance to the network in this case sustainable food culture in a community.

3 Methodology and Discussion of Findings

The methodology also includes consideration for the historical urban morphology, cultures and the ethnic backgrounds of this community using mixed methods of quantitative and qualitative approaches. A mixed field method (quantitative and qualitative) was employed in the collection, collation and analysis of primary data. The paper discussed a recent field survey carried out in the study area, based on quantitative and qualitative methodology. Sizeable numbers of questionnaire are administered to the target population, using stratified random sampling method in order to elicit primary data; with 76 percent response rate from the respondent. The survey and interview conducted highlights a number of observations and conclusion of the relationship between food production activities and its role in city development or formation. These factors include lack of planning on the part of the government, lack of coordination among the developmental agencies responsible for social amenities, failing infrastructures in the market, poor housing condition especially the low income earner due to large amount spent on food and deprivation of agricultural land. Some of the interview conducted highlights the extra territorial occupancy (due largely to the loss of agricultural land to residential layout), threat to remaining agricultural land (through indiscriminate acquisition of land by government and educational institutional in the city.

The initial series of interview are carried out by focusing on key actors involved in food production in the urban context. Bijker (1997:46) suggests following the actors, by the use of the ‘snowball’ approach, whereby the researcher allows the initial actor contacted to point the way to others actors. The research methods employed include the use of case studies, interviews and questionnaires to elicit primary data and information from key practitioners from the study areas. However, from the exploratory study and initial interviews conducted, it is clear that there is a drive and concern by for the development of a sustainable approach to the food problem in cities and urban centres without harming the earth.

The rapid urbanisation of sub Saharan Africa from a purely rural-agrarian society to a city based urbanised one is an interesting phenomenon to study and it has been of concern to many scholars as documented in several studies (see Hussain and Lunven, 1988; Jamal and Weeks, 1988; 1993; Mabogunje, 1968; Davey, 1996; Ellis and Sumberg, 1998; Drakakis-Smith, 1992; Drakakis-Smith, Bowyer-Bower and Tevera, 1995; Egziabher, 1994). It is also interesting to note that the story of food and food production activities are locked or intertwined in this rapid transformations and urbanization of African society. The transformation of African society is not only physical but encompasses socio-

cultural, economic, political and metaphysical in nature. Hence, this study is investigates the roles played by food production activities during the course of these rapid urbanisation or socio-cultural transformation and its impact on the built environment as experienced in the study area under review.

3.1 The Study Area

Nigeria is the most urbanised nation in Africa. It is a country of over 150 million people and it is the most populous black nation in the world. Infact, for every five African, one is a Nigerian. The study area is located in Akure, in south west Nigeria (see Figure 1). The city is a typical ancient West African city that was predominantly agrarian, but has undergone rapid urbanisation and transformation from a small pre-colonial town to a modern medium sized city through globalization and modernisation. Its history can be traced back to the 11th and 12th centuries and is closely tied to the history of its Yoruba kith and kin. (Osasona, 2002; Eades, 1980).

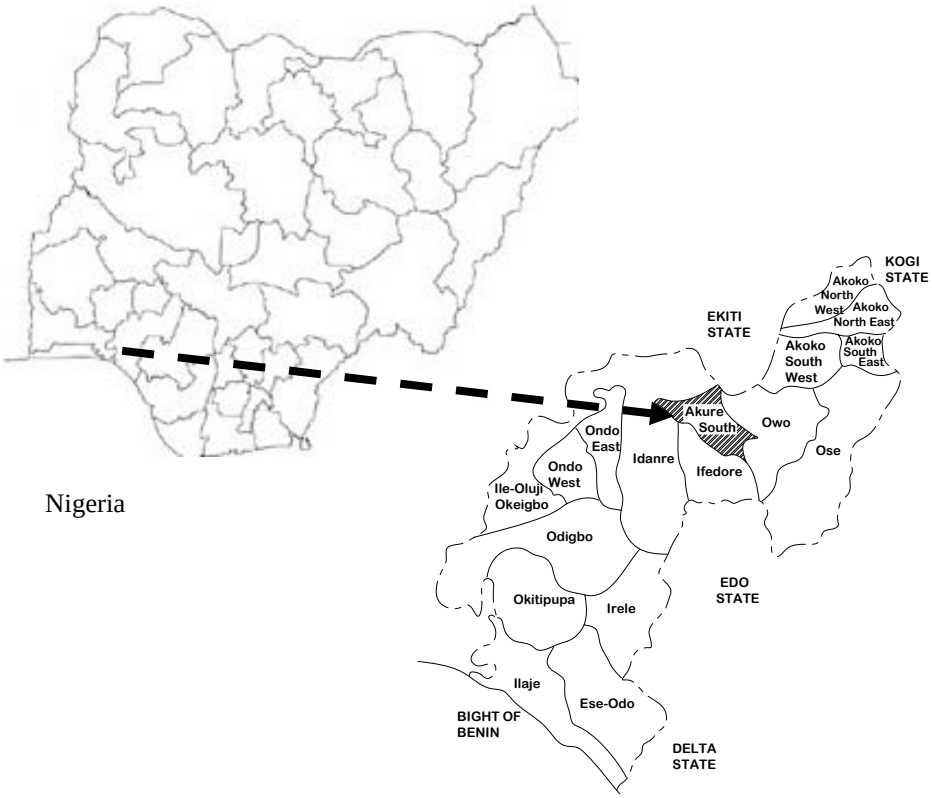

Figure1. Map of the Study Area.

The study is a medium sized city with a population of 408, 984 projected from the 1991 population census at 5% annual growth rate. It is situated 204 kilometers east of Ibadan, 168 kilometers west of Benin city and 311 kilometers North East of Lagos (former federal capital of Nigeria). The city is made of an undulating low land, rich with soil good for farming covering an area of over 16 square kilometers. On the world map, Akure can be found on latitude 7^{o} 15^{1} north of the Equator and longitude 5^{o} 15^{1} East of the Greenwich meridian. It is about 250m above sea level and the land towards Ado-Ekiti is hilly, studded with large granite formation said to be of volcanic origin. The town enjoys good rainfall over 1,500mm yearly with a mean temperature range or between 25^{o}C and 29^{o}C and a prevalent humid tropical condition. The study area offers a picture of a medium sized city that has experienced many layers of urbanization process involving the physical structure, historical, socio-cultural, political, religious and economic development. This can arguably be compared with Patrick Geddes anatomy of a city (Figure 2) based on an analytical triad of geographical (place), historical (work) and metaphysical (folk) aspects (Welter, 2002).

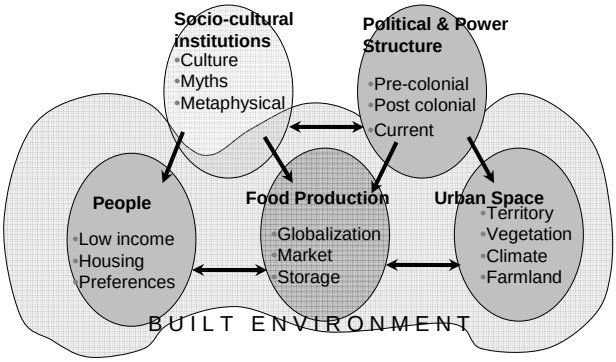

Figure2. Analytical network relationship based on Patrick Geddes city evolution

4 Modernity, Metamorphosis and the Changing Face of Cities

Cities concentrate a lot of people in a small area. It serves as the avenue for commerce and industry. The city attracts a large number of people concentrate because it presents the platform to provide food, education, water and energy in a more efficient way. In the urban centres, a lot more people can be reached by doing less. The people also have more scope, freedom of choice in terms of food in the city. Infrastructure and amenities are available in a more efficient way in the city. It affords the opportunity for socializing; there are cultural and educational reasons to have discussions with your own, your group and mates or

peers. Cities are political hotbeds, living in the cities afford the opportunity for taking part in the political process, where political ideas are hatched and cross fertilized. There is not one model how the city must be designed (Welter, 2002). Economic activities in many cities of the world are of concern because such activities is liken to one generation creating problem for another to contend with. Sustainable city should be an enjoyable city. It is a city people can move around easily. Improving public transport will help. Sustainability is a question of balance. It is achieving a sense of balance. City sustainability is a holistic concept that is focussed on successful use of available resources to enhance city's liveability. The source of many problems that plagued the city is not just technical related; hence they cannot be solved by technical means alone. Many of these problems are socio-political problems such as poverty, food shortage and lack of infrastructures. The food problem is not simply a technical one; hence we need to address them in a socio-political-economic ways (Figure 3).

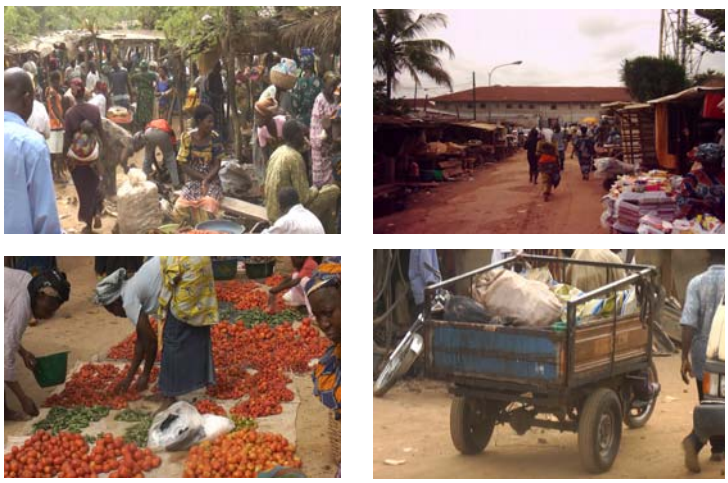

Figure 3. A market-street scene in southwest Nigeria

4.1 Westernization and acculturation impact on the urban form

The influence of the colonial era led to the beginning of the acculturation process in African cities (Freund, 2007). Gilbert and Gulger (1994) argued that the incursion of the European into the third world has sometimes led to the destruction of the existing local culture. The built environment is an expression of the very basic desire by man to enhance comfort within the area where he lives, works and recreates. Built environments take their shapes from the very functions they are expected to perform and various activities such as shapes its design. Examples are seen in the location of markets for the sale of food in the African urban centre. The built environment, whether it is a village or town is a product of the skillful organization of space in order to express in the one instance the peoples' social ideals and in another, humanity's notion of reality. The development of the Nigerian built environment can thus be discussed using

its traditional architectural pattern as a point of reference because of its cultural influence and practices on the country's landscape. This is epitomized in the people's traditional use of urban space in relation to food production activities usually revealed by three primary - deterministic cultural phenomena. The first is revealed in the built environment as consists of village/town settlements composed of individual house units and family compounds, their structural and conceptual layout across the landscape arrange around a market.

This reflects the ideals of corporate life in the visual pattern of the village, village group or in modern terms, the city or metropolis. The second is that traditional spaces are represented as a system of semiotic units which human settlements are composed as the external symbols. Thirdly, traditional management of urban space refers to given processes of transformations in which cultural components are drawn from the immediate social institutions through skillful manipulation and social interaction.

4.2 Traditional house forms and Socio-cultural Continuity

The layout of the family compounds reflects the social status of family life, the central courtyard makes for intensive social continuity among family members, where food are prepared and consumed. In short, urban spaces are planned to assert group needs as well as foster social cohesion and interaction. Rooms or huts that constitute the basic residential units in any traditional Nigerian compound are often arranged around a central area which may vary in shape, size and characteristics depending on the nature of the elemental units, form of construction adopted, influences of topography, historical influences on the particular culture and individual preferences.

In most traditional compounds such as in chiefly residences, palaces and large extended family units may contain a series of these courtyards linked together by passages. Such compounds are themselves aggregation of multiple residential units catering for different elementary households of an extended family. No matter the form or the nature of this element of Nigerian traditional dwelling, the function tends to be the same, serving group activities of adult and children, visitors and members of the household, male and female.

4.3 Traditional settlement layout and urban morphology

The Nigerian cultural and physical landscape furnishes us with a variety of village and town settlements whose spatial layout and design principles have lessons to teach us on their adaptive potentials for modern sustainable principles. Many of these villages provide the arable farmland for production of food for the country and many parts of West African countries. Factors behind their layout and spatial schemes are as intriguing as their formal attributes which are predicated on cultural factors of habitation not to speak of the environmental issues that influence their planning (Olayiwola, 2000). Such factors include the following: the ideals of society itself, the pressure of population density, social

organization, land-use pattern, the nature of available terrains, defense, the need for social and economic associations and religious precepts (see Table 1).

4.4 Transformations of a traditional city core

One important definer of human settlements in many parts of Africa including Nigeria is the notion of the centre. This may be the geometric centre of a group settlement physically or conceptually. In many societies, the center occupies strategic importance in the spatial scheme of settlements. For instance, in the radial-concentric shape of the Yoruba town particularly as a reflection of its social and political organization, the centre is the most strategic for a number of reasons. It is the magnetic centre of the town, which contains the most important unifying symbols, namely: the palace, a playground, and all the important shrines and Oba's market.

These features draw to the centre all the members of the society in connection with rituals and ceremonies associated with it. The same principle applies to other settlement layouts in many parts of Nigeria and sub Sahara Africa. The centre operates as the spatial and structural core of the traditional city's settlement layouts which constitute its most vital point of social interaction. When these corporate symbols are designed in response to the demands of unique local culture, our towns and cities may begin to assume a unique character of their own.

Table 1: Factors influencing urban transformation in Southwest Nigeria

Variables	Frequency	Percentage %
Social Status	55	27.5
Academic background	98	49.0
Cultural beliefs	26	13.0
Others	21	10.5
Total	200	100.0

Source: Author's fieldwork (2009)

5 Conclusion

The understanding of the socio-cultural and related economic activities thatunderpins the development of the city is paramount in order to plan for the city of the future. To provide a framework that could be used as a model in the developing world, the underlying socio-cultural issues such as food production activities must be taken on board, by the planners and policy makers. Need to emphasis that sustainability and sustainable gains will only be available through a purposeful planning and consideration for social- cultural issues that include the food question. In this regard, city policies, planning and management are

expected to be predicated on partnership involving all the relevant actors like the public, private and voluntary bodies at all levels.

This will lead to new approach of different buildings, built environments and agro-urban relationships, thereby serving as the central challenge for food production and enhancement of the built environment. Thus the study of sustainability is mainly to assess the environmental impact of human activities and to search for options, which could have least negative impact on natural environment. The sustainability of the natural environment includes less depletion of natural resources, less pollution and less consumption of energy which can ultimately yield manifold benefit for mankind in terms of provision for food, clothing and shelter.

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